

The

*Spotter News for
Southeast Arizona*

*National Weather Service, Tucson, AZ
February 2001*

The Next Step in Forecasting

Throughout the National Weather Service modernization over the past several years, we have continually improved our methods of gathering and processing information about the atmosphere (WSR-88D radar, new GOES satellites, ASOS surface observations, AWIPS processors, etc.). It would be unwise to ignore the human element in all this, so we have spent a lot of effort and energy in training to use the new equipment as well as always keeping up with and even creating the latest science. What next? The first answer is to keep it up. We owe it to the American people to lead the way and stay on the cutting edge of meteorology. It is with this in mind that we take the next step.

The new weather radio is made possible through the cooperative efforts of Cochise, Graham, and Greenlee county government officials. The counties are purchasing the transmitter and related equipment, while the National Weather Service will cover the costs of operation and maintenance. Installation of the equipment is scheduled for January 2000.

NOAA Weather Radio is the "voice" of the National Weather Service, providing continuous broadcasts of the latest information, forecasts, and warnings. Messages are repeated every 3 to 6 minutes and are routinely updated every 1 to 3 hours or more frequently in rapidly changing weather conditions. During severe weather, NWS personnel can interrupt the routine broadcast and insert special warning messages concerning imminent threats to life and property.

The broadcast for the Heliograph Peak transmitter will be tailored to the reception area, disseminating forecast and warning information area for only far-southeast Arizona. A special weather radio receiver or radio scanner is required to hear the NOAA Weather Radio programming, which is broadcast at a frequency of 162.40 to 162.55 MegaHertz. Cost of a weather radio receiver typically ranges from \$20 to \$100, with the more expensive models having a special alarm feature which is only activated for emergency messages in a specific area, typically a county or, in some cases, a section of a county. Contact your local electronics store for more information on purchasing a NOAA Weather Radio receiver. These devices can be used across the country to monitor weather conditions and forecasts as you travel. Visit the NOAA weather radio homepage at www.nws.noaa.gov/nwr for more information on transmitter locations and frequencies.

**Spotter Training Tips for
Winter Weather**

2000 Climate Review...October 2000 Flood
Review...Winter Weather Spotter Training Tips...Trail's
End News.

The SKYWARN Spotter Program is a valuable part of the Tucson National Weather Service forecast and warning program. Often times, weather spotters provide information that no amount of radar data, satellite imagery, or airport observation can provide. As we approach the winter season, here is a reminder of the criteria for calling in a report to the NWS Tucson office.

Winter Weather Spotting Criteria:

Heavy Rain (½ inch or more per hour, storm total of 1+ inches)

High Wind (estimated/measured 50+ mph)

Flooding (of any kind, road or structural damage, major bank erosion)

Heavy Snow (1 inch or more per hour, total of 3+ inches)

Low Visibility (1/4 mile or less, any reason)

Any weather-related death, injury, or damage

Phone numbers for NWS spotters to use:

Tucson Metro Area: 670-5161

Outside Tucson: 1-800-238-3747

Spotters located at elevations between 3000 and 6000 feet can often provide valuable information regarding snow levels and accumulations during winter storms since the rain/snow line is sometimes tricky to forecast.

Please remember that your timely phone calls can be very valuable to the NWS staff. A phone call the day after a storm or a report of light rainfall does not have a lot of utility, but a report of 2" of snow in the past hour is very valuable. Hopefully, southeast Arizona will see more active weather this coming winter than last, and our weather spotters will have many opportunities to call in reports.

Tucson International Airport			
(Temperatures in degrees Fahrenheit)			
...June 1999 stats...	Month	Normal	Departure
Average high temperature	98.1	99.6	-1.5
Average low temperature	69.5	67.9	+1.6
Average temperature	83.8	83.8	0.0
Precipitation	0.16"	0.20"	-0.04"
...July 1999 stats...	Month	Normal	Departure
Average high temperature	95.2	99.4	-4.2
Average low temperature	72.8	73.6	-0.8
Average temperature	84.0	86.6	-2.6
Precipitation	4.15"	2.37"	+1.78"
...August 1999 stats...	Month	Normal	Departure
Average high temperature	97.6	96.8	+0.8
Average low temperature	72.8	72.1	+0.7
Average temperature	85.2	84.5	+0.7
Precipitation	3.05"	2.19"	+0.86"
...September 1999 stats...	Month	Normal	Departure
Average high temperature	94.8	93.3	+1.5
Average low temperature	68.8	67.5	+1.3
Average temperature	81.8	80.4	+1.4
Precipitation	3.05"	2.19"	+0.86"

You may want to clip this article and keep it
near your telephone if you don't already
have the phone numbers and spotting

criteria **handy.**

La Niña - Still Hanging Around

The Climate Prediction Center's current forecast is for La Niña conditions in the Pacific ocean to continue through the winter. This La Niña phase began during the late spring of 1998 just after one of the strongest El Niño's of this century. This La Niña phase reached moderate intensity last winter but has only been ranked the tenth strongest since 1950. Typical of a La Niña, last winter was dry and warm in the Southwest U.S. Total precipitation from October 1998 through May 1999 at Tucson International was only 2.71 inches, 3 inches below normal. Temperatures averaged more than a degree above normal. Also typical of a La Niña winter is lower elevations seeing more snow days (remember the Easter snow storm?). Snow totals in the mountains were much below normal due to the overall lack of precipitation.

Satellite data this month indicates that the La Niña is indeed returning but so far it is not as strong as last year. To gauge the existence of La Niña (or El Niño) conditions, scientists use sea surface temperature anomalies. An "anomaly" is the difference between the observed variable (in this case sea surface temperature) and the long term average for the variable at that point. Last winter the sea surface temperature anomalies were near 3 degrees Celsius below normal; so far this Fall, the anomalies have only been 1.5 to 2 degrees Celsius below normal.

Looking at the history books, there have been 5 occurrences of back-to-back La Niña conditions since 1950. Water year precipitation (October through May) for Tucson indicates that three of these winters were dry but the other two were near normal. With only 5 similar situations and a mixed bag of results, drawing any kind of conclusion based on these statistics would be unwise. Temperatures follow the same pattern with warmer (cooler) winter temperatures associated with the dry (wet) years.

Another way of trying to forecast the future weather is to find a similar weather pattern in the past, or in this case, similar sea surface temperature anomalies. At present, a warm sea surface temperature anomaly exists from Japan eastward across the Pacific to east of the international dateline. Reviewing the years back until 1982, the winter of 1990/91 was very similar to the warm water we have in place now across the north Pacific. Tucson rainfall that winter was 5.81 inches and the average temperature was about a degree above normal. The rainfall that winter was concentrated at the beginning and end of the winter, with the intervening months being dry.

The science of meteorology has made major advances in seasonal weather prediction in the last twenty years. Computer models now forecast El Niño and La Niña conditions with some degree of accuracy up to a year in advance. Coupling this data with known relationships between El Niño and La Niña temperature and precipitation patterns, meteorologists can make more reliable seasonal forecasts. Farmers, ranchers, and other weather-dependent operations can then use these forecasts to maximize profit.

What does this mean to southeast Arizona weather for the coming winter season? The Climate Prediction Center forecast is for a better-than-normal chance of a warm, dry winter. Statistical and other techniques show no clear cut answer, but the wise person would lean toward the CPC forecast. Still, it's doubtful anybody will be unhappy if it rains a little more and is a little cooler than the current forecast.

—Pat Holbrook

Meteorologist Provides IMET Support for Several Fires in the West

Most NWS meteorologists do all their forecasting from their local office. However, a small number of meteorologists in the NWS are specially trained to provide mobile meteorologist support for wildfires. Rich Okulski is the mobile representative, officially called an Incident

Meteorologist (IMET) for the Tucson NWS office. Rich is a national resource and can be sent to fires anywhere in the United States.

As an IMET providing support to crews on a fire, Rich uses a laptop computer, printer, portable weather observing stations, DirecPC satellite system, and pilot balloon equipment for local upper air soundings. He also has access to the Internet and a special fire weather data server while on a fire.

This year, Rich was dispatched to four fires. The first three were in Arizona and were only 3 to 4 days in duration. The worst of these was in Whiteriver, Arizona on the Fort Apache Indian Reservation. The fire destroyed 17 homes, 13 other buildings and caused the evacuation of the town of Whiteriver for two (cont.) days. Governor Hull toured this fire by helicopter and received a briefing from the fire personnel on site.

The last fire took Rich to the central California coast in late September. He worked on this fire for 9 days and watched it grow from 10,000 acres to 35,000 acres. He dealt with a wide variety of weather. Temperatures climbed over 100 degrees inland, while it was in the 60s along the immediate coast.

Incident meteorologists are a critical resource on large fires. They provide information that fire managers use to fight fires that day, and also to plan on how to fight the fire over the next several days.

– Rich Okulski



*Rainbow fire at Whiteriver, Arizona
Photo courtesy of George Leach, Bureau of Indian Affairs*

1999 Monsoon Summary

This year's monsoon brought the usual flash flooding, high winds, and lightning causing an estimated \$11 million dollars in damage. Most of the damage is from the wash out of Catalina Highway on Mt. Lemmon and the flooding of Sabino Canyon. Fortunately no deaths and only two injuries associated with thunderstorms were reported. Both person were shocked by lightning while talking on the telephone. About a dozen wind gusts greater than 50 knots were reported around the Tucson metro area, the strongest being 90 knots occurring at Ryan Field Airport. Hail about one inch in diameter fell in the Tucson area on the 19th and 31st of August. Some of the more severe events include:

July 6th: Eleven people needed to be rescued in Pima County after flash flood waters engulfed their cars. Spotters Robert & Norma Grove reported 0.90 inches of rainfall in 30 minutes causing the flash flooding.

July 9th: Many urban and rural roads were flooded in Willcox as heavy rainfall, as much as 0.85 inches, was reported by Hunsden Farms and Spotter Ray Mitchell.

July 15th: Six to seven inches of rainfall at the headwaters of Sabino Canyon and Bear Canyon resulted in a rapid rise of the Sabino Creek. Peak flow was measured at 10,600 CFS. This was the highest summer flow recorded by this gage in its 67 year history. Spotter Karl Reinhard reported 1.55 inches of rainfall at 7 that morning.

July 25th: Three inches of rain in the mountains near Portal caused area creeks to rise rapidly. The Portal Ranger Station reported the evacuation of several campers after their campground became flooded.

August 8th: Spotters Robert Hollister, Stephen Bieda Jr., and Charles & Peggy Morris in the

Sierra Vista area reported 1 to 2 inches of rainfall that forced the closure of many roads due to flash flooding.

August 27th: Moisture from Hurricane Bret helped ignite severe thunderstorms in the Tucson International Airport area. Spotter Rick Doughty reported 40 knot winds, pea sized hail, and 1.18 inches of rainfall for this storm.

August 31st: Green Valley Spotters Mario Alexay, Nelson “Ray” Raymond, Mrs. Charles Catino, and Felix & Barbra Henderson reported winds as high as 50 knots, 0.5 inch diameter hail, and rainfall amounts ranging from 0.3 inches to 0.45 inches.

September 15th: The Arizona Department of Transportation reported 2-3 inches of hail in the Rose Peak area 30 miles north of Clifton. Snow plows were needed to clear part of Highway 191.

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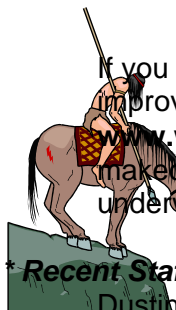
LaRosa

**HMT Ken Brown passed away October 20 after an extended illness. Ken started his weather career in the Air Weather Service in 1959. Ken's National Weather Service career began in Williston, ND, followed by duty locations at Hondo, TX, Limon, CO, before coming to Tucson in 1995.*

** Coyote Crier on the Web*

If you have internet access, we encourage you to view the Coyote Crier on our web site at http://www.wrh.noaa.gov/tucson/misc/coy_crier/coy_crier.html . Please let us know if you would be willing to use the internet version rather than receiving the paper copy. If so, you would be sent an email notification each time the spotter newsletter is issued. This would help us reduce costs and provide the Coyote Crier to you in a more efficient manner. Contact Andy Bryant by email at andy.bryant@noaa.gov or call (520)670-6526 to subscribe to the internet version.

** Changes to the NWS Tucson Web Site*



If you haven't surfed the NWS Tucson web site for a while, take a look at the new and improved version. Note that the address has been changed to www.wrh.noaa.gov/Tucson/twc.html, and the site has received an extensive makeover in order to present information to you in a more organized way. Work is still underway on the site, so be patient if you notice an "unlinked" link.

*** Recent Staff Changes at NWS Tucson**

Dustin Guy left Tucson this Summer to take a Met Intern position at the Seattle NWS office.

The National Weather Service
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(520)670-6526
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Glen Sampson, Meteorologist in Charge
Bonnie Maguire, Administrative Support Assistant

Paul Flatt, Warning Coordination Meteorologist
David Bright, Science & Operations Officer

Senior Meteorologists:
Jeff Davis
Jim Meyer
Rich Okulski
Erik Pytlak
Rich Van Ess

Meteorologists:
John Glueck
Pat Holbrook
Sheryl Towle
Gary Zell

Paul Crimmins, Data Acquisition Program Mgr.
Hydro-Meteorological Technicians:
Archie Benson
Hans Hanson
Mic Sherwood

Chris Rasmussen, Meteorologist Intern
Andy Bryant, Service Hydrologist

Jim Schmidt, Electronics Systems Administrator
Electronics Technicians:
Kris Johnson
Norm Phelps